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ABSTRACT

This study at American River College (California) researches freshmen persistence as measured by the attainment of academic benchmarks. The percentage of freshmen at American River College who enroll in the fall and continue in the immediate spring semester is typically 60%. To gain additional information about persistence, the college studied these students' academic achievement benchmarks: (1) completed 6, 15, 30, 45 or 60 units; (2) received a certificate; (3) was awarded an associate degree; or (4) achieved transfer ready status. The results from fall 1993 and fall 1994 freshmen indicated that, out of 6,200 students, 60.6% completed six units, 41% reached 15 units, and 14.7% earned 60 units within four years. Only 5.6% were awarded the associate degree. Freshmen affiliated with a student service on campus persisted longer and achieved more than other freshmen. These students performed at a higher level at each stage of the transfer ready model. Figures 1-7 display freshmen persistence/achievement curves by term, gender, units/awards, ethnicity, age, and student service involvement. Table 1 illustrates freshman performance according to service programs, including Athletics, Equal Opportunity, Disabled Student Services, Partnership to Assure College Entry, and Math Engineering Science Achievement. Tables 2-8 further show student persistence/achievement curves by gender, ethnicity, age, and student service. (AS)

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Freshmen Persistence As Measured by Reaching Academic Achievement Benchmarks

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Freshmen Persistence As Measured by Reaching Academic Achievement Benchmarks

James E. Barr &Richard Rasor

Abstract

The traditional measure of persistence is basically a percentage headcount of a particular cohort (usually new freshmen) who continue enrollment through subsequent semesters. At American River College the percentage of such freshmen enrolling in fall and continuing to the immediate spring semester is typically 60%. The persistence percentages trail off even further over a period of four years. Thus we can say with high assurance that 40% of freshman students exit between fall and spring semesters. Some may eventually return, most will not.

To gain addition information about persistence, we added academic achievement benchmarks such as completed 6, 15, 30, 45, or 60 units (transfer level or not), received a certificate, awarded an associate degree, or achieved transfer ready status. While academic achievement is not quite the same as simple persistence, a student cannot achieve these benchmarks without persisting.

The results from fall 1993 and fall 1994 ARC freshmen (n = 6,200) indicated that 60.6% completed 6 units, 41% reached 15, units and 14.7% earned 60 units within four years. Only 5.6% were awarded the associate degree. Starting with different cohorts (e.g., ethnic groups or students who start in basic skills), one is able to track academic achievement and determine when they leave the college. For example, Asian students completed 60 units at a proportionally higher rate than any other ethnic group but few of them bothered to obtain the associate degree. One very important additional finding was that freshmen affiliated with a student service on campus persisted longer and achieved more than other freshmen. Furthermore, student service group freshmen performed at a higher level at each stage of the transfer ready model. These findings could not be explained by any known demographic including assessment test results.

Persistence/Achievement Model

Persistence as Measured by Reaching Achievement Benchmarks

The traditional measure of persistence is basically a percentage head count of freshmen who continue enrollment through subsequent semesters. At American River College the percentage of such freshmen enrolling in fall and continuing to the immediate spring semester is typically 60%. The persistence percentages trail off even further over a period of four years. Thus we can say with high assurance that 40% of freshmen students exit between the first fall semester and the subsequent spring semester. Some may eventually return, most will not. The traditional persistence data in the form of a four-year curve can be seen in Figure 1.

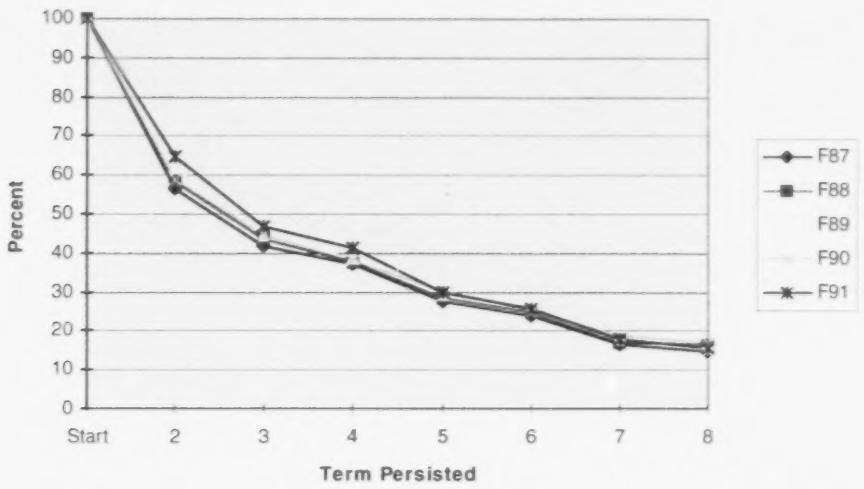

Figure 1. Four-year Term-to-Term Persistence of New Freshmen.

To gain addition information about persistence, achievement benchmarks were added such as completed 6, 15, 30, 45, or 60 units, received a certificate, an associate degree, or reached transfer ready status (56+ transfer units, 2.0+ GPA, completion of English 1A and a transfer math or statistics course). While achievement is not quite the same as "pure persistence," a student cannot achieve these benchmarks without persisting so there is considerable overlap. With this new approach, only new freshmen without prior college units were used and they were allowed four years of enrollment opportunity. Surprisingly, the persistence/achievement curve is very similar to the traditional persistence curve which yields less information (see Figure 2).

Persistence/Achievement Model

Combining fall 1993 and fall 1994 ARC freshmen yielded a total sample size of 6,200. For the analysis, each cohort was given four years of opportunity to complete their achievements. Figure 2 shows that about 61% of new freshmen complete 6 units, 41% reach 15 units, 29% complete 30 units and only 5.6% receive the associate degree. An interesting finding is that 14.7% of the original freshmen reached 60 units within four years, yet only 5.6% received the degree. Obviously, many students completing their programs at ARC are not applying for the associate degree. Starting with different freshmen cohorts (e.g., gender, ethnic or age groups), one is able to track their academic achievements and determine about when they left our institution. These are displayed next.

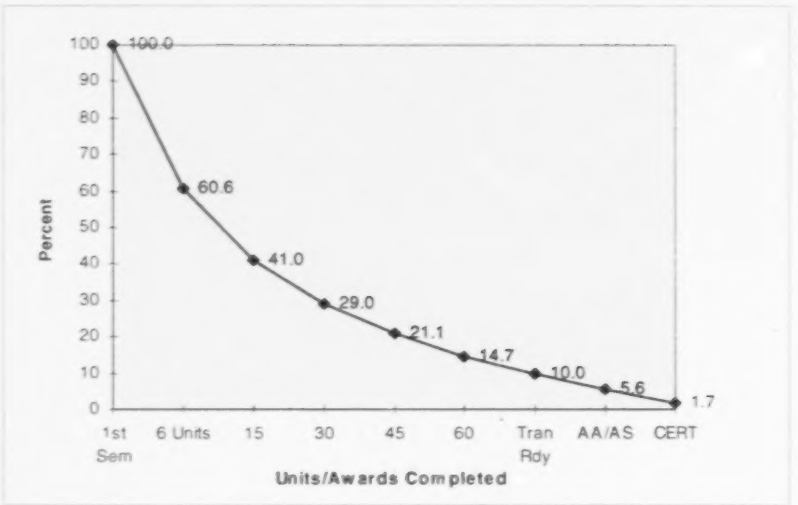

Figure 2. Freshmen Persistence/Achievement Curve for ARC Freshmen.

Persistence/Achievement by Gender

Figure 3 shows the persistence/achievement curves for male and female ARC students. The two lines are nearly identical with the exception being a slight difference favoring females in receiving the associate degree.

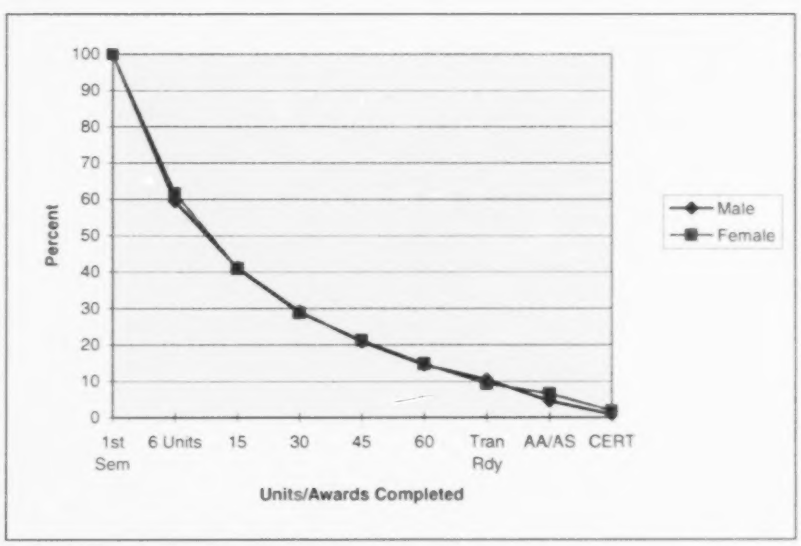

Figure 3. Freshmen Persistence/Achievement Curve by Gender.

Persistence/Achievement by Ethnicity

The persistence curves displayed for different ethnic groups reveal many differences. Because white students make up nearly 68% of the ARC student body, one may use their rates as a reference. The first big difference is at the 6 unit mark. Almost 76% of Asian students complete 6 units whereas 62% of white students do. Furthermore, traditional minority groups (i.e., American Indians, African Americans, and Hispanics) trail rather substantially. At the 60-unit mark, white students have a completion rate of 15%, Asians 28%, while only 4% of African American students get this far within four years. The largest drop off from 60 units to the associate degree is for Asian students.

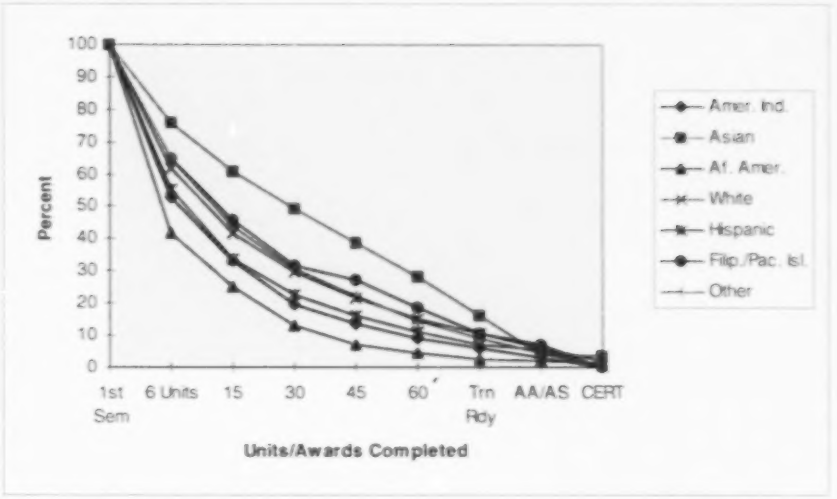

Figure 4. Freshmen Persistence/Achievement Curve by Ethnicity.

Persistence/Achievement by Age

The various ages are established at the time of first enrollment. Clearly, the age groups of <18 and 18-20 out-persist and out-achieve other age groupings. Of course, the initial starting groups were not restricted by type of academic goal. Therefore, many older students may not have goals which call for continuous enrollment. It is important to note that 20 years and younger represents 65% of the starting cohorts. Though the average age of the community college student has risen over past years, it is the younger students who continue to be the most productive in terms of persistence, transfer ready and degrees.

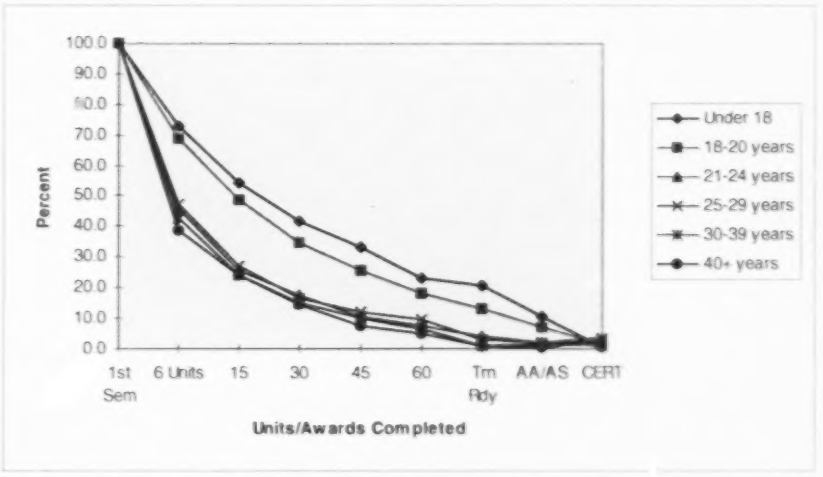

Figure 5. Freshmen Persistence/Achievement Curve by Age.

New Student Service Freshmen Academic Performance

This past year, there has been much work across the state devoted to the development of a new model for student service program review. At ARC, student service program review is a relatively new concept and not yet well designed or implemented. Though student performance is routinely evaluated within instructional program review at ARC, no research (until now) has evaluated performance indicators such as success, persistence, degrees, and transfer ready for students participating in student service groups such as EOP&S (Equal Opportunity Program and Services), DSP&S (Disabled Student Program and Services), Athletes (college sports), MESA (Math Engineering Science Achievement), PACE (Partnership to Assure College Entry) and LD (learning Disabilities).

With few exceptions, new freshmen with no prior college experience, are the largest group that could be dubbed "at risk," meaning that the success rate is often substantially below the rest of the student body. Of course, there are significant exceptions for we would not have a continuing enrollment if many were not successful. Many new freshmen try ARC and then disappear. Some will return to at a later date, many will not. Small increases in freshmen success and persistence will result in progressively larger enrollments over each succeeding semester as each new freshman retained is added to the general enrollment. Pressures on recruitment can be lessened if freshmen success and persistence is increased.

The purpose of this section is describe new research findings which indicate that ARC first-time-freshmen affiliated with one of the student service groups mentioned, dramatically outperform non-student service group affiliated freshmen on several important performance indicators that include success rate, GPA, achievement/persistence and transfer ready rate. Additionally, the implications of these findings are discussed.

Freshmen Performance by Student Service Group (5 year composite)

Table 1. Composite First-Term Freshmen Performance by Student Service Group (Five Years).

Student Service Group	A %	B %	C+CR %	D %	F+NC %	WT %	I %	GPA	Success Rate
ATHLETE	31.5	14.6	17.0	7.7	10.7	17.9	0.7	2.42	63.0
DSPS	16.2	9.9	20.7	4.4	17.3	31.1	0.5	2.23	46.8
EOPS	13.1	12.4	34.7	3.4	12.8	22.8	0.9	2.34	60.2
LD	26.4	16.7	33.3	5.6	12.5	5.6	0.0	2.63	76.4
PACE	50.0	12.5	0.0	0.0	12.5	25.0	0.0	3.56	62.5
MESA	17.6	29.8	19.8	8.4	6.9	17.6	0.0	2.56	67.2
All Other Freshmen	17.6	17.2	18.4	5.4	14.7	25.7	0.9	2.26	53.3

(Total sample size for student service groups = 7,346)

Note that the last row of Table 1 shows the comparable rates for all other first-time freshmen who are not affiliated with any of the student service groups examined.

Table 1 shows the combined success rates for all student service affiliated freshmen over the past five years as related to student service functions. The success rate is based solely upon their first

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semester at ARC. A new feature has been added to this table which is the success rate for freshmen not associated with a student service group thereby allowing direct comparisons. With very few exceptions, the success rate for freshmen belonging to one of these service groups is higher than for the comparable freshmen group who are not identified with any particular service. While one cannot prove that a particular service caused a higher success rate, the association is clear. Either the service initially attracts the more able and motivated student, or the service exerts a direct benefit that is seen as improved performance over those not receiving the service. Subsequent research has shown that assessment scores for the student service groups are predominately lower than for other freshmen (see Table 5).

Persistence/Achievement by Student Service

The difference between the service and no-service freshmen is dramatic. (see Figure 6). Further research was conducted to search for other explanatory variables which might account for the difference. Tables 2 through 5 clearly show the same phenomena across gender, ethnicity, and age groups. Another possibility might be that the service affiliated students have higher ability and that is why they performed better academically. Not true. The assessment test scores for English and math placement were examined for both groups. In all cases the service affiliated freshmen had equal or lower means on every test than did the non-service freshmen (see Table 5). While these results are still correlational (no one was randomly assigned to a service), it strongly suggests that the service itself made the difference. Finally, this finding was even true for each type of service except PACE which deals with students that have the lowest probability of success. This is the first time that the contribution of a student service to persistence/achievement has been statistically documented.

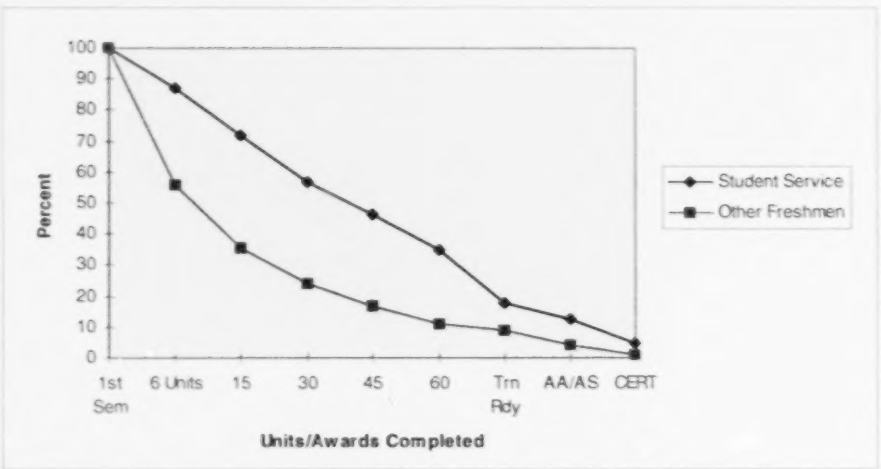

Figure 6. Persistence/Achievement Curve by Student Services and Non-student Services Affiliated Freshmen.

Persistence/Achievement by Student Service Groups and Other Freshmen: Gender

Table 2. Persistence/Achievement Curve by Student Services by Gender.

	Percent Units/Awards Completed								
	1st Sem	6 Units	15	30	45	60	Trn Rdy	AA/AS	CERT
Student Service: Male	100.0	85.0	68.9	53.9	44.7	33.4	18.7	10.1	2.8
Other Freshmen: Male	100.0	55.0	36.2	24.8	16.7	11.2	9.1	3.5	0.5
Student Service: Female	100.0	89.1	74.4	59.1	47.8	36.3	16.8	14.9	3.4
Other Freshmen: Female	100.0	56.8	35.1	23.4	16.6	11.0	8.2	5.1	1.6

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Stages of Completion of Transfer Ready Model for Student Service First-semester Freshmen and Other Freshmen: Gender

Table 6. Stages of the Transfer Ready Model for Fall 1993 and Fall 1994 Freshmen Cohorts by Student Service and Other Freshmen by Gender.

	Transfer Ready Stages of Completion						
Gender	Fresh. Cohort	Enrolled Transfer English	Enrolled Transfer Math	Enrolled Both	56+ Units GPA 2.0+	Successfully Completed Eng. and Math	Tran Rdy Rate
Stud. Service: Male	47.6	53.0	41.9	35.7	20.3	18.7	52.3
Other Freshmen: Male	47.7	36.6	25.4	20.3	9.4	9.1	44.7
Stud. Service: Female	52.4	50.5	33.8	27.7	18.7	16.8	60.6
Other Freshmen: Female	52.3	40.1	20.6	17.8	8.5	8.2	45.8

Student Service First-semester Freshmen and Other Freshmen: Ethnicity

Table 7. Stages of the Transfer Ready Model for Fall 1993 and Fall 1994 Freshmen Cohorts by Student Service and Other Freshmen by Ethnicity.

	Transfer Ready Stages of Completion						
Ethnicity	Fresh. Cohort	Enrolled Transfer English	Enrolled Transfer Math	Enrolled Both	56+ Units GPA 2.0+	Successfully Completed Eng. and Math	Tran Rdy Rate
Stud. Service: Amer. Ind.	2.6	66.7	50.0	41.7	20.8	16.7	40.0
Other Freshmen: Amer. Ind.	2.8	26.6	11.9	11.9	4.9	4.2	35.3
Stud. Service: Asian	14.9	44.9	64.0	39.0	25.7	25.0	64.0
Other Freshmen: Asian	5.8	40.3	37.7	26.7	12.3	12.3	46.3
Stud. Service: Af. Amer.	12.0	46.8	11.9	11.0	5.5	5.5	50.0
Other Freshmen: Af. Amer.	6.7	25.1	9.2	6.1	1.4	1.4	23.8
Stud. Service: White	57.1	52.3	35.0	32.3	20.4	18.7	57.7
Other Freshmen: White	68.1	40.6	24.0	20.6	9.7	9.7	47.0
Stud. Service: Hispanic	9.3	58.8	40.0	35.3	18.8	17.6	50.0
Other Freshmen: Hispanic	11.2	31.1	16.4	13.1	5.2	5.2	39.5
Stud. Service: Filip./Pac. Isl.	1.6	80.0	53.3	53.3	33.3	20.0	37.5
Other Freshmen: Filip./Pac. Isl.	2.6	44.9	33.8	25.0	9.6	9.6	38.2
Stud. Service: Other	2.4	40.9	31.8	27.3	18.2	9.1	28.6
Other Freshmen: Other	2.9	47.7	22.8	20.1	8.7	8.7	38.2

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Table 5. Assessment Test Scores for Student Service Affiliated and other Freshmen.

Assessment Test	Mean Score
Student Service: APS English	39.60
Other Freshmen: APS English	47.09
Student Service: MDTP, Algebra Readiness	19.68
Other Freshmen: MDTP, Algebra Readiness	22.74
Student Service: MDTP, Elementary Algebra	20.25
Other Freshmen: MDTP, Elementary Algebra	21.31
Student Service: MDTP, Intermediate Algebra	21.73
Other Freshmen: MDTP, Intermediate Algebra	21.12

Notice that in every achievement columns of Tables 2 to 4, the student service group had a higher percentage of achievement than did other freshmen. Because this phenomena holds across gender, ethnicity, and age, one cannot attribute causal demographic connections with the findings. The fact that the student service assessment test means (Table 5) are equal or lower than other freshmen rules out skill level or ability as a causal explanation. Thus, one is left with assuming that the service itself caused the difference in freshmen performance.

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Transfer Ready

The Transfer Ready Model was designed to meet many of the shortcomings associated with transfer rates reported from the CSU/UC systems. This section compares student service group freshmen with non-affiliated student service group freshmen.

To remind the reader, the transfer directed are those new freshmen students, without prior college units, who enroll in both English 1A and a transfer level mathematics or statistics course. The transfer ready are those students who complete 56+ transfer units at ARC, have a 2.00+ GPA on those transfer units, and complete English 1A and a transfer math or statistics course with at least a "C" or "CR" grade - all within four years from the time of initial enrollment. With these accomplishments, such students are "ready to transfer" to at least the CSU system. Finally, the transfer ready rate is the percentage of the transfer directed who complete the transfer ready requirements (TR/TD x 100).

Transfer Ready Overall: Student Service & Other Freshmen

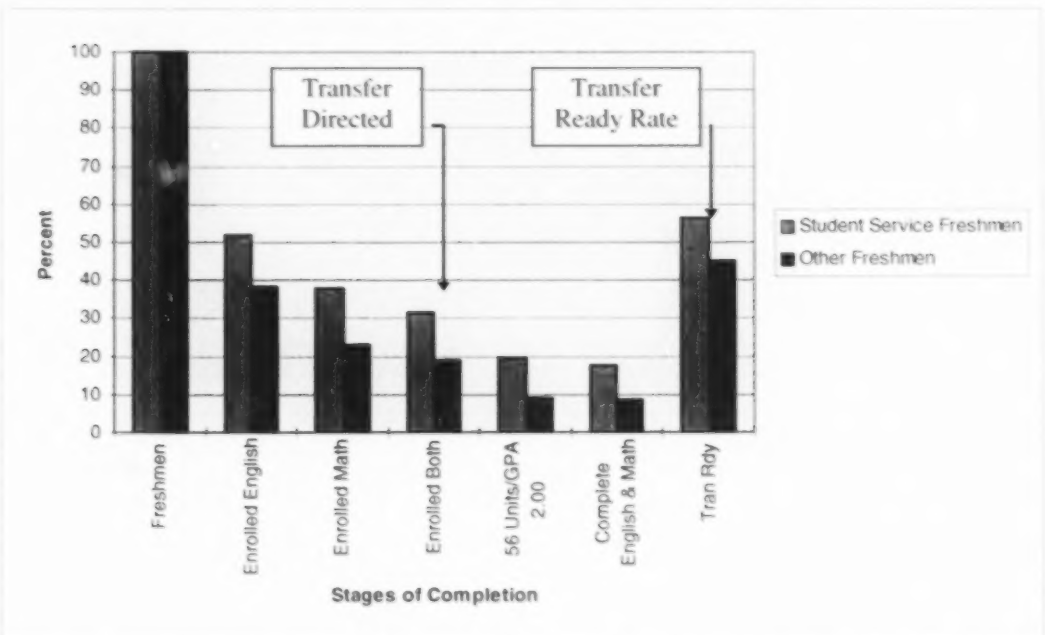

Figure 7. Stages of the Transfer Ready Model for Fall 1993 and Fall 1994 Freshmen Cohorts by Student Service and other Freshmen.

Figure 4 shows that the student service cohort is ahead of other freshmen at every stage within the Transfer Ready Model. The transfer ready rate for freshmen affiliated with student services is 56.1% versus 45.2%. In Tables 6 to 8, the data on the Transfer Ready Model for gender, ethnicity and age groups are displayed.

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Stages of Completion of Transfer Ready Model for Student Service First-semester Freshmen and Other Freshmen: Gender

Table 6. Stages of the Transfer Ready Model for Fall 1993 and Fall 1994 Freshmen Cohorts by Student Service and Other Freshmen by Gender.

	Transfer Ready Stages of Completion						
Gender	Fresh. Cohort	Enrolled Transfer English	Enrolled Transfer Math	Enrolled Both	56+ Units GPA 2.0+	Successfully Completed Eng. and Math	Tran Rdy Rate
Stud. Service: Male	47.6	53.0	41.9	35.7	20.3	18.7	52.3
Other Freshmen: Male	47.7	36.6	25.4	20.3	9.4	9.1	44.7
Stud. Service: Female	52.4	50.5	33.8	27.7	18.7	16.8	60.6
Other Freshmen: Female	52.3	40.1	20.6	17.8	8.5	8.2	45.8

Student Service First-semester Freshmen and Other Freshmen: Ethnicity

Table 7. Stages of the Transfer Ready Model for Fall 1993 and Fall 1994 Freshmen Cohorts by Student Service and Other Freshmen by Ethnicity.

	Transfer Ready Stages of Completion						
Ethnicity	Fresh. Cohort	Enrolled Transfer English	Enrolled Transfer Math	Enrolled Both	56+ Units GPA 2.0+	Successfully Completed Eng. and Math	Tran Rdy Rate
Stud. Service: Amer. Ind.	2.6	66.7	50.0	41.7	20.8	16.7	40.0
Other Freshmen: Amer. Ind.	2.8	26.6	11.9	11.9	4.9	4.2	35.3
Stud. Service: Asian	14.9	44.9	64.0	39.0	25.7	25.0	64.0
Other Freshmen: Asian	5.8	40.3	37.7	26.7	12.3	12.3	46.3
Stud. Service: Af. Amer.	12.0	46.8	11.9	11.0	5.5	5.5	50.0
Other Freshmen: Af. Amer.	6.7	25.1	9.2	6.1	1.4	1.4	23.8
Stud. Service: White	57.1	52.3	35.0	32.3	20.4	18.7	57.7
Other Freshmen: White	68.1	40.6	24.0	20.6	9.7	9.7	47.0
Stud. Service: Hispanic	9.3	58.8	40.0	35.3	18.8	17.6	50.0
Other Freshmen: Hispanic	11.2	31.1	16.4	13.1	5.2	5.2	39.5
Stud. Service: Filip./Pac. Isl.	1.6	80.0	53.3	53.3	33.3	20.0	37.5
Other Freshmen: Filip./Pac. Isl.	2.6	44.9	33.8	25.0	9.6	9.6	38.7
Stud. Service: Other	2.4	40.9	31.8	27.3	18.2	9.1	28.6
Other Freshmen: Other	2.9	47.7	27.8	20.1	8.7	8.7	38.2

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Student Service First-semester Freshmen and Other Freshmen: Age Groups

Table 8. Stages of the Transfer Ready Model for Fall 1993 and Fall 1994 Freshmen Cohorts by Student Service and Other Freshmen by Age Groups.

	Transfer Ready Stages of Completion						
Age Groups	Fresh Cohort	Enrolled Transfer English	Enrolled Transfer Math	Enrolled Both	56+ Units GPA 2.0+	Successfully Completed Eng. and Math	Tran Rdy Rate
Stud. Service: Under 18	7.6	76.8	55.1	55.1	36.2	34.8	63.2
Other Freshmen: Under 18	9.5	62.9	41.0	35.5	19.2	18.6	52.3
Stud. Service: 18-20 years	52.8	65.3	50.3	42.6	26.0	23.1	54.1
Other Freshmen: 18-20 years	56.4	48.8	30.6	25.8	11.6	11.2	43.4
Stud. Service: 20-24 years	9.9	41.1	30.0	22.2	13.3	13.3	60.0
Other Freshmen: 20-24 years	11.1	18.4	7.8	5.4	2.8	2.8	51.6
Stud. Service: 25-29 years	9.8	32.6	21.3	12.4	10.1	10.1	81.8
Other Freshmen: 25-29 years	8.1	16.4	4.7	2.6	1.7	1.7	63.6
Stud. Service: 30-39 years	13.8	22.2	10.3	7.9	3.2	2.4	30.0
Other Freshmen: 30-39 years	8.9	11.9	3.0	1.7	0.4	0.4	25.0
Stud. Service: 40+ years	6.1	17.9	7.1	5.4	3.6	3.6	66.7
Other Freshmen: 40+ years	5.9	8.8	3.2	1.9	1.0	0.6	33.3

Note: Age groups are identified at time of first enrollment.

With few exceptions, the student service affiliated freshmen outperformed the non-student service affiliated freshmen (other freshmen). Again, these are rather dramatic findings that parallel the same type of findings for other data presented on success, GPA, and persistence.

Conclusions

This research has shown that it might be more advantageous to add achievement benchmarks to the traditional concept of persistence. In this way much more information is available about what is happening with our students in terms of typical measures for academic completion, (i.e., units, degrees and certificates, transfer preparation). This model can be set up in such a way to examine any starting cohort, whether it be all new freshmen, gender or ethnic groups, or students who start at basic skill levels.

The over all research findings which indicate that first-semester student service affiliated freshmen are quite successful on a number of performance indicators is remarkable. Admittedly, we were quite surprised to discover how well the student service students performed. Interestingly, though not shown in this paper, recent results also indicate that the results on the same performance indicators were similar for all student service students when compared to all non-student service group affiliated students (non-freshmen and freshmen). On a further note, we have also done some preliminary breakouts among the student service groups described in this paper. Early results indicate that significant differences exist among student service groups for the performance indicators discussed. We plan to develop this data more completely for inclusion into the student service program review for those students services where appropriate. The obvious question that needs to be addressed at this point is: Why are student service group freshmen so much more

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successful? These findings could be unique to American River College, but we suspect that this is not the case. At the present time, we have not had an opportunity to replicate these findings with our sister colleges or elsewhere. Why are we so surprised at the results? It is quite possible that we had fallen into the trap of simply accepting the old adage often cited by instruction that "instruction is the most significant influence in a student's life" and tended to look for solutions concerning student success only on the instruction side of the house.

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